

# SOME CRYPTOGAMIC NOTES FROM THE BOTANIC GARDENS, SYDNEY.

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(Plate xx.)

This paper deals with Ferns and Mosses. Two new species and one new variety are described. Notes are added concerning other species, including some new records. A new Tribe of the *Polypodiaceæ* is also proposed and defined.

## FERNS.

### i.

DRYOPTERIDÆ: a suggested new Tribe of the *Polypodiaceæ*.

It was long the custom to classify a large section of the *Polypodiaceæ* on the basis of the presence, or absence, of a superior indusium. The species bearing such indusium were classed as the *Aspidiææ* (ἀσπίς, a shield), while those lacking such indusium were the *Polypodiææ*. Under this classification, the genus *Aspidium* covered a large range of species and numerous subgenera. But it was at length realised that, by this arrangement, ferns that had many natural affinities, especially in frond-formation and venation, were needlessly and unscientifically kept apart. Hence the conviction that the older classification attached undue importance to the presence, or absence, of an indusium – a conclusion that was strengthened by the discovery of exindusiate forms of indusiate species, and by the fact that, in some supposedly exindusiate species, traces had been found of a small and extremely fugacious indusium.

In these circumstances, an old genus of Adanson's, dating back to 1763, was revived and expanded, viz., *Dryopteris*, a genus, as the name implies, consisting of ferns whose fronds showed a supposed resemblance to the oak-leaf. I have not

access to Adanson's original description, but, judging from C. Christensen's "Enumeratio,"\* his *Dryopteris* consisted of aspidioid ferns with free veins; i.e., it was the equivalent of Presl's "*Lastræa*" (1836). In recent times, *Dryopteris* has been used in at least two, different senses. On the one hand, it has been made to cover *all* the oakleaf-like ferns, whether indusiate or exindusiate; and, on the other hand, it has been limited to the indusiate ferns alone of this class. In the former case, the indusiate species have received the subgeneric name *Eudryopteris*, while the exindusiate species have constituted the subgenus *Phegopteris*. Where, on the other hand, *Dryopteris* has been limited to the indusiate species, *Phegopteris* has been made a separate genus.

The wider signification of *Dryopteris* has been adopted by Christensen (*op. cit.*), and K. Domin.†. Capt. van Alderwerelt van Rosenberg‡ has divided all the *Polypodiaceæ* into the "Indusiatae" and the "Exindusiatae"; and has, therefore, separated *Phegopteris* from *Dryopteris*, placing it in a new tribe, *Phegopterideæ*. Domin, with justice, calls Van Rosenberg's scheme in question§; but in following Christensen and making *Phegopteris* a subgenus of *Dryopteris*, Domin is in danger of seeming to support a classification that includes exindusiate ferns under the *Aspidiææ*; to my mind, an undesirable arrangement, and indeed a contradiction in terms.

It is only fair to Domin to state that he avoids this situation by carefully refraining from any use of tribal divisions under the *Polypodiaceæ*, a procedure, however, that is scarcely to be followed in dealing with a family that includes the great bulk of the ferns of the world.

To avoid, (a), the unscientific separation of *Phegopteris* from the vicinity of *Dryopteris*, (b), the inclusion of exindusiate ferns

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\* Index Filicum, 1906, p. xxi.

† Pteridophyta.

‡ Malayan Ferns, 1908.

§ Van Rosenberg himself (*op. cit.*, p. 486) says, in a note on *Phegopteris*, "Its proper place is near *Dryopteris*, from which it differs by the wanting indusium only."

among the *Aspidiæ*, and (c), the growing cumbrousness of the genus *Dryopteris*, as defined in Christensen's Index, I venture to suggest the separation of the supposedly oak-leaf ferns, in order to make them a new tribe, *Dryopterideæ*.

The new tribe will include *Dryopteris* in what appears to have been Adanson's original sense (= *Lastræa*), *Nephrodium*, *Phegopteris*, *Goniopteris*, and *Meniscium*, all considered as genera.

I put forward this suggestion after much hesitancy, but in the belief that it will serve the double purpose of bringing within manageable bounds the, at present, unwieldy genus *Dryopteris*, and of promoting the interests of a more natural classification.

In accordance with the requirements of the Vienna Rules, I submit a Latin description, and an analysis, as follows:—

#### DRYOPTERIDEÆ, Trib. nov.

Stipes ad rhizoma non articulatus; frondes foliorum quercūs memorantes, venis solutis vel plus minusve unitis; sori indusiati vel exindusiati, reniformes vel rotundati vel plus minusve oblongi, ad venas mediales vel terminales, interdum confluentes, indusiis, si exstantibus, soris æquiformantibus.

1. DRYOPTERIS Adans., 1763; *Lastræa* Presl; *Eudryopteris* auctt.

Sori, for the most part, distinctly indusiate; veins free.

2. NEPHRODIUM Schott, 1834; *Aspidium*§ Christ; *Eunephrodium* auctt.

Veins more or less united, especially alongside the costa; sori indusiate.

3. PHEGOPTERIS (Presl) Fée; *Euphegopteris* auctt.

Exindusiate, or indusium early shrivelling and disappearing; veins free. This includes *Leptogramma* (sori oblong or linear).

4. GONIOPTERIS Presl, 1836; *Phegopteris*§ auctt.

Exindusiate, or indusium early shrivelling or disappearing; sori never confluent; veins more or less as in *Nephrodium*. This includes *Stegnogramma* (sori oblong or linear).

5. MENISCIUM Schreb.; *Phegopteris*§ auctt.; *Dryopteris*§ auctt.

Veins uniting as in *Goniopteris*; exindusiate; sori often confluent at the junction of the transverse veinlets and "not rarely running along the excurrent veinlets."

Adopting the above arrangement, our Australian species will stand as follows: -

- Dryopteris decomposita* (R.Br.) O. Ktze.  
*D. glabella* (A. Cunn.) C. Chr.  
*D. acuminata* (Lowe) Watts.  
*D. tenera* (R.Br.) C. Chr.  
*D. velutina* (Rich.) O. Ktze.  
*D. alborillosa* Watts.  
*D. Baileyana* Domin.  
*D. lanciloba* (Bak.) O. Ktze.  
*D. dissecta* (Forst.) O. Ktze.  
*Nephrodium gongylodes* (Schkr.) Schott; *N. unitum* R.Br.  
*N. pteroides* (Retz.) Desv.  
*N. parasiticum* (L.) Desv.  
*N. truncatum* (Poir.) Presl.  
*N. decorum* (Dom.) Watts.  
*Phlegopteris punctata* (Thunb.) Mett.  
*P. setigera* (Bl.) Bak.  
*P. ornata* (Wall.) Fée.  
*P. queenslandica* (Dom.) Watts; *Polypodium aspidioides* Bail.  
*P. tropicu* (Dom.) Watts; *P. aspidioides* var. *tropica* Bail.  
*P. rufescens* (Bl.) Mett.  
*P. wurmuran* (Dom.) Watts.  
*Goniopteris urophylla* (Wall.) Presl.  
*G. Danesiana* (Dom.) Watts.  
*G. Hillii* (Bak.) Watts.  
*G. pæcilophlebia* (Hook.) Bail.  
*G. prolifera* (Retz.) Pr.  
*Meniscium triphyllum* Sw.

ii.

ATHYRIUM HUMILE Watts, sp.nov.

(Plate xx., fig.1.)

*Rhizoma* repens, subtenue, dense paleaceum, paleis pallide brunneis, basi lati-ovatis, apice breviter vel longe acuminatis, cellulis diplazioideis, rhizomatulis numerosis, longis, ramosissimis, fuscis ad subatris, madore carnosis. Stipites approximati, subflexuosi, ad 1 dm. longi, basi fusci, incrassati dense paleacei,

paleis rhizomaticis conformibus, deinde tenues, pallescentes, plus minusve paleacei, paleis tenuibus, longe et flexuose acuminatis, cum glandibus articulatis pallidis intermixtis. *Frons* anguste ovato-lanceolata, longe acuminata, falcatula, ad 1.5 dm. longa et 5 cm. lata, facie antica fusco-viridi, postica pallido-viridi, haud nitenti, infra pinnata, deinde pinnatifida, gradatim breviter lobata, apice subintegra; *pinnis infimis* subsessilibus, plus minusve distantibus, oppositis vel suboppositis, obovatis, squarrosis vel deflexulis, ad 2 cm. longis et 1 cm. latis; *pinnis mediis* approximatis, sessilibus ad decurrentibus, alternantibus, longioribus (ad 3 cm. longis et 0.75 cm. latis), oblongo-lanceolatis, *supra* gradatim suberecto-patentibus, paullulum sursum curvatis, lobis apicem versus gradatim abbreviatis, in summo apice evanidis; pinnis et lobis omnibus (superioribus exceptis) plus minusve crenato-lobatis, segmentis oblongo-rotundatis, apice interdum crenulatis, segmento primo acroscopico evolutiori; lobis frondis apicem versus subcrenulatis ad integris; *rhachi* parce hirsuta, in superiori dimidio alata; pinnis et lobis *penninervatis*, nervis sæpe indistinctis; faciebus et rhachi et costis cum glandibus articulatis præditis. *Sori* breves, in pinnarum et lorum nervis, juxtacostales, stricti vel subarcuati; *indusio* membranaceo, pallido, margine crenulato vel subcristato, introrsum aperiienti. *Textura* subcoriacea.

Damp base of rock in The Rapids, Ellenborough River, the Bulga, viâ Wingham: leg. W. W. Watts, April, 1915.

### iii.

#### NOTES AND RECORDS.

1. HYMENOPHYLLUM PELTATUM (Poir.) Desv.; *H. Wilsoni* Hook.; *H. unilaterale* Willd.

This interesting fern was collected by Mr. J. L. Boorman, on Barrington Tops, in January, 1916. Mr. Wilson published a description, with an admirable figure, of the species in "English Botany, Suppl., t. 2686" (1831), as *Hymenophyllum Wilsoni* Hook., (Brit. Fl., i., 446, 1830). In Hooker and Baker's "Synopsis," p. 67, it is made a variety, " $\beta$ ," of *H. tunbridgense* Sm., but a note is added, "*H. peltatum* (Poir.) oldest name." Christensen also (Index) identifies *H. Wilsoni* with *H. peltatum* (Poir.) Desv.,

Prod., 333, 1827. Assuming this identity, the name *H. peltatum* must stand. Poiret published his species, in 1808, as *Trichomanes peltatum*. In 1810, Willdenow published it as *Hymenophyllum unilaterale* (certainly the most appropriate name); and in 1830-31, it was, as already stated, described and figured as *H. Wilsoni* Hook., (specimens collected in Ireland by Mr. Wilson). It is interesting to know that we have this fern, as well as *H. tunbridgense*, in Australia. I have no hesitancy in separating the two species, even on the ground of the unilateral pinnae of *H. peltatum*, to say nothing of its differently-shaped and entire indusium.

There are specimens in the Herbarium (Sydney) collected on the Snowy River by Mr. W. Bäuerlen, as also specimens from Tasmania (Archer & Gunn), but these have, until now, been placed in the *H. tunbridgense* box. Mr. Boorman's specimens are ample, quite characteristic, and in good condition.

## 2. HYMENOPHYLLUM RARUM R.Br.

This southern species was collected on Mt. Wilson by Mr. Boorman and myself, in May, 1915. Not previously recorded north of Illawarra, though Mr. Whitelegge reports having found it in Blackheath Glen.

## 3. DRYOPTERIS ACUMINATA (Lowe) Watts; *Lastræa* Moore.

A small, dark green, shiny *Dryopteris*, found here and there in New South Wales, has hitherto been identified, for the most part, with *D. decomposita* (R.Br.), from all forms of which it certainly differs. Mr. Thos. Whitelegge, for many years, has regarded it as Lowe's *Aspidium acuminatum* (Fil., vi., t.11, 1857). Lowe's description is scarcely adequate, but his accompanying figure leaves little or no doubt in my mind that Mr. Whitelegge's view is correct. Lowe's species (supposed by him, apparently, to have been Willdenow's *A. acuminatum*, which is, according to Christensen, a syn. of *Nephrolepis biserrata*) was based on specimens grown at Kew, but he did not know to what country it belonged. Many years ago, Mr. Whitelegge sent specimens of our Australian fern to Mr. T. Rogers, of Manchester, who confirmed its identification with Lowe's species. Hooker and Baker

(Syn., p.281) make *Lastræa acuminata* Moore, (1858) a syn. of *Aspidium Shepherdii* Ktze., (Linn., 23, 230, 1850), which Christensen (Index Fil.) identifies with *D. decomposita*. Not having access to Linnæa, I can only keep Lowe's nomenclature; but if *A. Shepherdii* and *A. acuminatum* are identical, then Kuntze's name must have the precedence. *Dryopteris glabella* (Cunn.), is an entirely different plant.

I collected this fern (*D. acuminata*) plentifully, in 1915, on the Bulga Heights, viâ Wingham; and Mr. Boorman and I found ample specimens on Mt. Wilson, in the same year.

Var. CRISTATA, var.nov.

Among the specimens of *Dryopteris acuminata* found on Mt. Wilson by Mr. Boorman and myself, in 1915, was one large plant which exhibited a distinctly cristate habit, and I submit it as a well-marked variety, as follows:—

Frondis et pinnarum apicibus elongatis, sæpe dichotome ramosis, cristatis, ramis erectis vel suberectis, linearibus, marginibus lobatis, lobis acute seriatis.

#### 4. PLATYZOMA MICROPHYLLUM R.Br.

This most interesting fern was described by Robert Brown in his "Prodromus" (1810) under the generic name *Platyzoma*. Baron von Mueller, in 1864,\* regarded it as a *Gleichenia*, and published it as *G. platyzoma*. Dr. Christ, in 1897,† described this fern under the name *Gleichenia microphylla* (R.Br.). Domin makes it *Gleichenia microphylla* Christ. The fact that Brown published a *Gleichenia microphylla* in close proximity to his *Platyzoma microphyllum* makes this an inconvenient nomenclature; and if his *Platyzoma* is to be included in *Gleichenia*, we must follow Christensen, who adopts F. von Mueller's name, *G. platyzoma*. But *Platyzoma* exhibits such unique characters, especially in the presence of the subordinate filiform leaves, which, though described by Brown (*loc. cit.*), and figured by Guillemain,‡ have been so much overlooked, that it seems to me the genus *Platyzoma* must stand.

\* Veget. Chat. Isl., 63.

† Farnkr., p.339.

‡ Icones Lithographice (1827), t.13.

## MOSESSES.

## i.

*FISSIDENS* (*Amblyothallia*\*) *HUMILIS* Dixon et Watts, sp.nov.

(Plate xx., figs.2a-d.)

*Autoicus*, flore masculo ad surculum brevem terminali; humilis, dense cæspitosus, pallide virens, haud nitidus; *caulis* 3 mm. ad 5 mm. usque altus, simplex vel subsimplex, basi radiculosus, infra laxe supra dense foliosus; *folia* usque ad 18-juga, infima parva, supra sensim majora, ligulato-lanceolata, breviter acuminata, superiora usque ad 1.5 mm. longa et 0.25 mm. lata, omnia immarginata, integra vel prope apicem indistincte subcrenulata, sæpe in unicâ triangulari hyalinâ cellulâ terminata, humida erecto-patentia, subfalcata, sicca appressa, rigida, falcatura, superiora incurva, nervo infra summum apicem evanido, in foliis inferioribus amœne rufo, in superioribus flavo, pellucido, subflexuoso, falcato; *lamina vaginans laminâ apicali* longior, in foliis infimis omne fere folium occupans, *lamina dorsalis* inferne angustata, ad basin nervi enata; cellulis in lam. vaginanti rotundato-quadratis, subpellucidis, 0.005-0.007 mm. in diam., in lam. apicali et dorsali densioribus, minutioribus; perichætium terminale; vaginula cylindrica, fusca, circa 0.26 mm. alta; seta ad 3-4 mm. usque alta, basi subito curvata, flavo-brunnea, deinde substricta, flavescens; *theca* suberecta, symmetrica, humida ovato-oblonga, sicca ovata, sub ore constricta, fusco-viridis, e cellulis exothecii turgidis, laxe hexagonis, subrugulosa; *operculum*  $\frac{2}{3}$  vel ultra longitudinis thecæ, rostratum, leniter curvatum, acutum basi brunneum, supra pallidum; *peristomium* simplex, dentes 16, basi connati, erecti (sicca valde incurvi), purpurei, dense papilloso, indistincte trabeculati, intus appendiculati, deinde in cruribus longis duobus, filiformibus, dense papillosis dividi; *spori* flavo-virides, levissimi, circa 0.015 mm.; *calyptra* pallida, longa, mitri-formis.

*Surculus masculus* brevis, 3-4-juga, foliis latioribus, brevioribus, lamina vera omne fere folium occupante, cellulis laminæ apicalis et dorsalis majoribus.

On silt, near the Harbour, Newcastle, N.S.W., leg. Chas. L. Burgess (ex herb. W. H. Burrell).

Comparable with *P. integerrimus* Mitt., but readily distinguished by its smaller size, the form of its leaves, and their acuter apex, the smaller and denser cells of the lamina apicalis, and other characters.

ii.

NOTES AND RECORDS.

1. *LEPTOSTOMUM INCLINANS* R.Br.; *L. flexipile* C.M.

This fine moss, not hitherto recorded from New South Wales, though often found in Tasmania and Victoria, was collected by Mr. Boorman on Barrington Tops in January, 1916, in ample material in good condition. Our only *Leptostomum*, up to now, has been *L. erectum* R.Br. New South Wales records of *L. macrocarpum* Hedw., existed formerly in the Melbourne Herbarium, but the specimens proved, upon examination, to be *L. erectum*.

2. *HAMPEELLA PALLENS* (Lacoste) Fleischer.

This unique little moss is a tropical and subtropical species. In Australia, it was first found by Mr. Thomas Whitelegge on Cambewarra Mountain in 1885, and was regarded by Dr. V. F. Brotherus as a new genus, *Whiteleggea (australis)*. It was published, however, in the first Part of Brotherus' "Some new Species of Australian Mosses," as *Lepidopilum australe*, the description being based on specimens collected at Harvey's Creek, North Queensland, by the late F. M. Bailey. Mr. Whitelegge found it again, in 1891, at Lilyvale; and I was fortunate enough to find it at several places on the Richmond and Brunswick Rivers, N.S.W., between 1895 and 1901. When my specimens were sent to Dr. Brotherus, he remarked on "this interesting rediscovery of *Whiteleggea australis*," having apparently, up to this point, overlooked its identity with his *Lepidopilum australe*. But in his "Bryales" (Engler's Pflanzenfamilien), we have the remark (p.963) that *Lepidopilum australe* belonged to the new genus, *Whiteleggea*. Before, however, this great work was completed, the distinguished author had discovered that he had been anticipated, and he described and figured this curious moss under the name *Hampeella pallens* (Lac.) Fleisch. It turned

out that it had been first found in Java, and published, by Lacoste, in 1872, as *Cladomnion pallens*. In 1881, what proved later to be the same plant was published, by Dr. Carl Mueller, as a new genus, *Hampeella* (*H. Kurzii*). The species, therefore, after a chequered career, has settled down under the name *Hampeella pallens* (Lac.) Fleisch.

Three years ago, I collected it at Tully Falls, N. Queensland, and at different times I have come across it at Wyong, and even at Mt. Wilson, in New South Wales. Mr. Boorman has recently brought it from the Dorrigo, and records having seen it on Mt. Lindsay.

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#### EXPLANATION OF PLATE XX.

Fig. 1.—*Athyrium humile* Watts, sp.n.

Fig. 2.—*Fissidens humilis* Dixon et Watts, sp.n.

a., Plant (nat. size).

b., Plant (enlarged).

c., Male sureulus.

d., Leaves (enlarged).